

## CLAIMS

What is Claimed is:

1. 1. A conjugate pair of intermeshing rotors having helical lobes comprising helical crests and intervening grooves and adapted for rotation about parallel axes within a working space of a screw rotor machine, each rotor has a tip circle, a pitch circle, and a root circle, one rotor of each pair being a female rotor such that the major portion of each lobe of said female rotor is located inside said pitch circle of said female rotor, the other rotor being a male rotor formed such that the major portion of each lobe of said male rotor is located outside said pitch circle of said male rotor, the lobes of one rotor following the grooves of the other rotor to form a continuous sealing line between said pair of rotors, each of said lobes having a primary and secondary flank portion, wherein said primary flank portion of said lobes of said female rotor have a profile formed from at least one ellipse and said primary flank portion of said lobes of said male rotor have a profile formed from at least one ellipses.
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15. 2. The conjugate pair of intermeshing rotors according to claim 1, wherein said primary flank portion of said lobes of said female rotor is formed by first and second tangent ellipses and said primary flank portion of said lobes of said male rotor is formed by first and second tangent ellipses.